Sandia National Laboratories

PROPOSAL FOR ADMINISTRATIVE NO FURTHER ACTION ENVIRONMENTAL RESTORATION SITE 62, GREYSTONE MANOR SITE (COYOTE SPRINGS) OPERABLE UNIT 1334

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Environmental
Restoration
Project

United States Department of Energy
Albuquerque Operations Office

PROPOSAL FOR ADMINISTRATIVE NO FURTHER ACTION ENVIRONMENTAL RESTORATION SITE 62, GREYSTONE MANOR SITE OPERABLE UNIT 1334 AUGUST 1994

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1.0 INTRODUCTION

1.1 ER Site Identification Number and Name

Sandia National Laboratories/New Mexico (SNL/NM) is proposing an administrative no further action (NFA) decision for Environmental Restoration (ER) Site 62, Greystone Manor, Operable Unit (OU) 1334. ER Site 62 was formerly included in OU 1272 in the Hazardous and Solid Waste Amendments (HSWA) Module IV (EPA August 1993) of the SNL/NM Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management Facility Permit (NM5890110518) (EPA 1992).

1.2 SNL/NM Administrative NFA Process

This proposal for a determination of an administrative NFA decision has been prepared using the criteria presented in Section 4.5.3. of the SNL/NM Program Implementation Plan (SNL/NM February 1994). Specifically, this proposal will "contain information demonstrating that there are no releases of hazardous waste (including hazardous constituents) from solid waste management units (SWMU) at the facility that may pose a threat to human health or the environment" (as proposed in the Code of Federal Regulations (CFR) Section 40 Part 264.51[a] [2]) (EPA July 1990). The HSWA Module IV contains the same requirements for an NFA demonstration:

> Based on the results of the RFI [RCRA Facility Investigation] and other relevant information, the Permittee may submit an application to the Administrative Authority for a Class III permit modification under 40 CFR 270.42(c) to terminate the RFI/CMS [corrective measures study] process for a specific unit. This permit modification application must contain information demonstrating that there are no releases of hazardous waste including hazardous constituents from a particular SWMU at the facility that pose threats to human health and/or the environment, as well as additional information required in 40 CFR 270.42(c) (EPA August 1993).

In requesting an administrative NFA decision for ER Site 62, Greystone Manor, this proposal is using existing administrative/archival information to satisfy the permit requirements. This unit is eligible for an administrative NFA proposal based on one or more of the following criteria taken from the RCRA Facility Assessment Guidance (EPA October 1986):

Criterion A: The unit has never contained constituents of concern

Criterion B: The unit has design and/or operating characteristics that effectively prevent releases to the environment

Criterion C: The unit clearly has not released hazardous waste or constituents into the environment

Specifically, ER Site 62 is being proposed for an administrative NFA decision because the SWMU was operated effectively to prevent releases of hazardous waste or constituents to the environment (Criterion B).

1.3 Local Setting

SNL/NM occupies 2,829 acres (ac) of land owned by the Department of Energy (DOE), with an additional 14,920 ac of land provided by land-use permits with Kirtland Air Force Base (KAFB), the United States Forest Service (USFS), the State of New Mexico, and the Isleta Indian Reservation. Sandia Corporation (a subsidiary of AT&T) operated SNL/NM for DOE from the time of its opening in 1945 until September 1993, when Martin Marietta Corporation undertook operation. SNL/NM has been involved in nuclear weapons research, component development, assembly, testing, and other nuclear activities since 1945.

ER Site 62 (Figure 1-1) is owned by KAFB (unassigned) with a SNL/NM right-of-way through the area. The site is located immediately adjacent to Coyote Springs on the south side of Arroyo del Coyote near the picnic area and south of ER Site 21 (62-30). The site lies on 6.87 ac of land at a mean elevation of 5,863 feet (ft) above sea level (SNL/NM April 1994).

This inactive site is located on alluvial deposits correlated to the Salas Complex (IT May 1994), with permeabilities ranging from 0.6 to 2.0 inches (in.) per hour (USDA 1977). Geologic and hydrologic conditions at ER Site 62 are inferred from outcrops of Precambrian quartzite to the east and north and Paleozoic rock to the west and southwest, from the Starfire Optical Range well lithologic log, and from routine monitoring of Coyote Springs. Although the Starfire Optical Range well lies approximately 3 mi to the south and is not the closest monitoring well to ER Site 62, it lies in the same geologic setting east of the Coyote Fault. Therefore, based on the lithologic log for the Starfire Optical Range well and rocks exposed in the surrounding mountains, ER Site 62 is anticipated to lie on 20 to 40 ft of alluvial deposits that are underlain by Paleozoic or Precambrian rocks. Depth to groundwater is approximately 10 ft or less, as evidenced by the active groundwater discharge at Coyote Springs and intermittent alluvial seeps (IT May 1994).

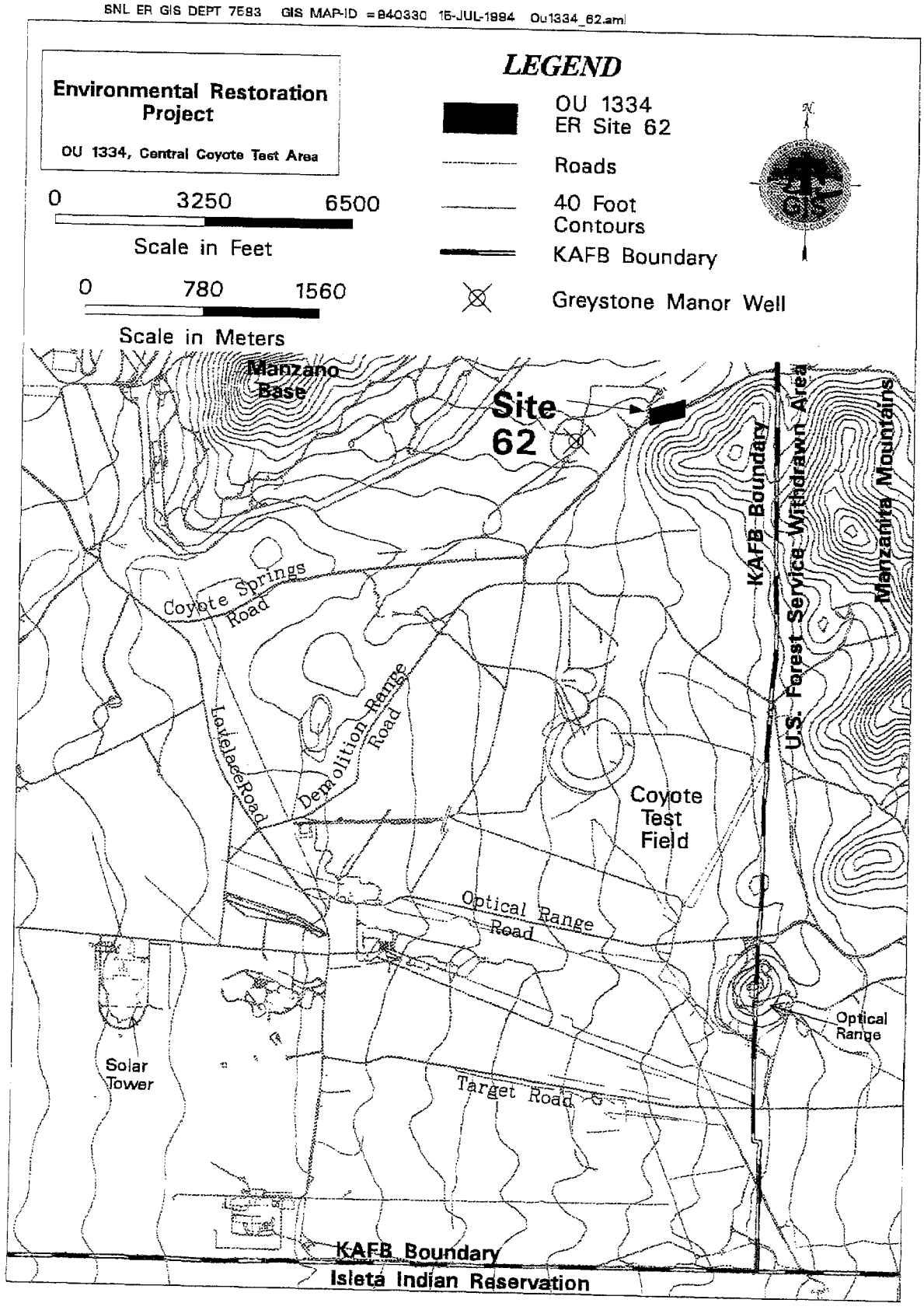


Figure 1-1
Location of ER Site 62, Greystone Manor Site

2.0 HISTORY OF THE SWMU

2.1 Previous Audits, Inspections, and Findings

ER Site 62 was first listed as a potential release site based on the Comprehensive Environmental Assessment and Response Program (CEARP) interviews in 1985 (DOE September 1987). CEARP noted that some small explosive shots were conducted in an uncovered deep hole near Coyote Springs, and residual explosives (including barium) may remain in the area. Additionally, CEARP reported that somewhere in the same area a building was blown up using methyl acetylene-propane-propadiene (MAPP) gas. (It was later discovered that the MAPP gas test occurred at the Ranch House, ER Site 88A.) Insufficient information prevented calculating a Hazard Ranking System score for the SWMU.

Subsequent to the CEARP inspection, the Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA). This SWMU was not addressed in the RFA report (EPA April 1987).

2.2 Historical Operations

ER Site 62 consists of minor scattered rubble associated with the former Greystone Manor and its wading pool and bathhouse (Figures 2-1 and 2-2). Greystone Manor was one of the early homesteads in the area, and a 1951 aerial photograph shows a large, gable-roofed house east of Coyote Springs that matches the description of this early homestead (USGS 1951). This property was formerly owned by the Chavez family and included the house, a 100-ft-diameter wading pool fed by Coyote Springs, and a bathhouse that was rented by area residents as part of the recreational activities at the site (62-33).

SNL/NM conducted small explosive tests with terrain models at Greystone Manor between approximately 1952 and 1957 (62-13, 62-24, 62-25, 62-26, 62-32). The testing that took place at Greystone Manor used 0.5- to 1-ounce (oz) charges of HE (62-30, 62-32), so that the explosion could be adequately contained in a moderately strong room of fair size (i.e., 225 to 400 ft^2) (62-13). However, one SNL/NM employee involved with the experiments, stated that testing took place both inside and outside Greystone Manor (62-30). These studies examined the cause for hillsides facing a nuclear blast to experience markedly greater damage than the lee side of the hill facing away from the explosion source. Through earlier studies, it was found that there was a definite pressure enhancement on the forward side compared to that expected on level ground, with corresponding reduced pressures on the lee side. This effect, named the "hill-and-dale" effect, was explored more carefully through a series of laboratory experiments using small quantities of high explosives (HE) at Greystone Manor and later at a building in SNL/NM Technical Area III (62-13, 62-24, 62-30, 62-32, 62-45). CEARP also reported that a building was blown up with MAPP gas in the vicinity of Greystone Manor. Recent ER Project interviews confirmed that the Ranch House (ER Site 88A) was actually blown up with MAPP gas, and not Greystone Manor.

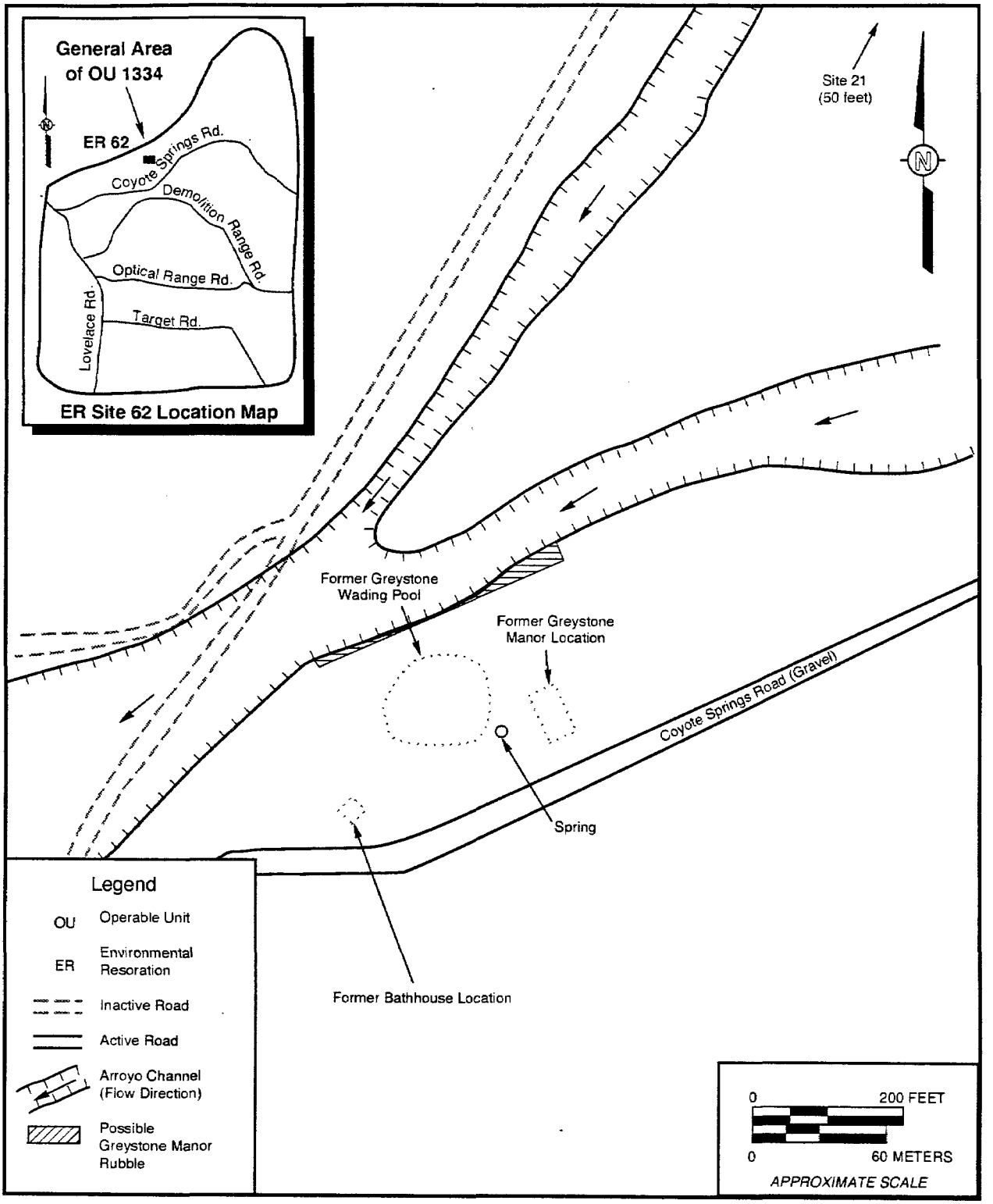
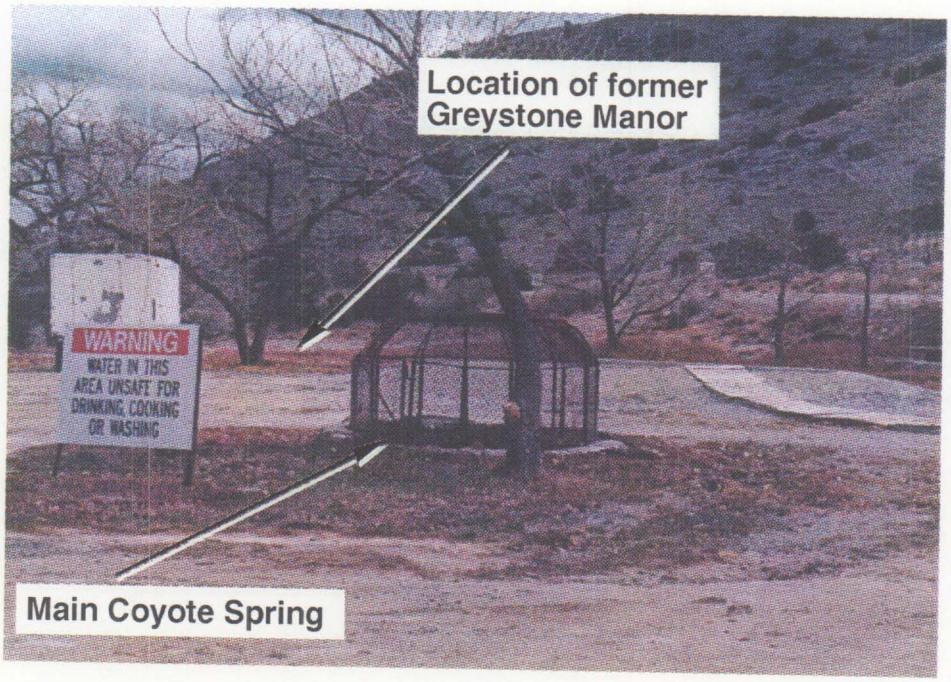


Figure 2-1
Site Map of ER Site 62, Greystone Manor Site



Location of former Greystone Manor, ER Site 62, immediately behind spring screen in center of photo. View to the east.

Figure 2-2
ER Site 62 Photograph

The charges were formed with Composition B, modified with 5 to 10 percent 2,4,6-trinitrotoluene (TNT), and detonated with Number 6 commercial caps (62-13). Composition C may also have been used in the charges (62-28).
Terrain models were constructed of aluminum plate that was 5/16-in. thick and bolted to aluminum channels for rigidity. Slope angles could be adjusted from 0 to 30 degrees. The overpressure radius from a 0.5-oz charge was determined to be 10 ft or less, so the overall dimensions of the models were approximately 3 by 12 ft. The models did not have to be as wide as they were long, because it was determined that the width would not adversely affect the test results (62-13). Charges were detonated at varying heights over the models, and high-speed cameras and pressure gauges were set up to record the shock waves (62-24, 62-45, 62-13).

Greystone Manor and its associated structures were removed from the site between 1957 and 1959, as evidenced by aerial photographs (USGS 1959). One former SNL/NM employee thought Greystone Manor was torn down because it was rat-infested at the time of a bubonic plague scare (62-28). Only small pieces of scattered rubble remain at the site. The site is now covered by a gravel parking lot and concrete pads, and is currently used by KAFB for war games and bivouac activities.

2.3 Discussion of Information Conflicts

The CEARP report (DOE September 1987) described ER Site 62 as a site where small explosive shots were conducted in an uncovered deep hole near Coyote Springs. The location and history of ER Site 62 has been better defined through recent ER Project interviews. Greystone Manor was originally built as a homestead adjacent to Coyote Springs. It was used by SNL/NM between approximately 1952 and 1957 to evaluate the relation between terrain and blast effects from scale-model tests using small explosive charges (less than one ounce) (62-13, 62-24, 62-25, 62-26, 62-32). Most of the tests were conducted inside the building, but some testing is also reported to have occurred outside the building.

CEARP also reported that a building was blown up with MAPP gas in the vicinity of Greystone Manor. Recent ER Project interviews confirmed that the Ranch House (ER site 88A) was actually blown up with MAPP gas, and not Greystone Manor.

3.0 EVALUATION OF RELEVANT EVIDENCE

3.1 Unit Characteristics

From 1952 to 1957, SNL/NM conducted small scale explosive tests (less than one ounce charges of HE) inside, and possibly outside, Greystone Manor. The indoor tests were operated to contain all materials inside the building, resulting in no releases to the environment. The outside tests, if conducted, would have utilized such small quantities of HE that no residual hazardous waste or constituents would remain at the site.

3.2 Operating Practices

The testing used 0.5 to 1 ounce charges of HE so that the explosion could be contained in a "moderately strong room of fair size" (62-13). All HE was consumed in the tests.

3.3 Presence or Absence of Visual Evidence

There is no visual evidence of the testing at ER Site 62. Greystone Manor was demolished in the late 1950s. Only minor scatted rubble associated with the former Greystone Manor remains at the site.

3.4 Results of Previous Sampling/Surveys

3.4.1 UXO/HE Survey

In November 1993, KAFB Explosive Ordnance Disposal conducted a surface unexploded ordnance (UXO)/HE survey at the site that was completed in conjunction with ER Sites 21 and 88. Expended ordnance collected and removed during this survey included ten smoke grenades, two 40-millimeter white star cartridges, one booby trap simulator, and numerous rifle shells and casings. No UXO or HE was found (21-34). It is unlikely the ordnance collected was related to ER Site 62 activities because many groups—including the Defender Challenge, civil engineering, the KAFB hospital, and the KAFB security police—use the Coyote Springs area as a training/bivouac area (21-14, 21-18). The ordnance collected during this survey was probably the remnant of training exercises conducted by one or more of these groups.

3.4.2 Gamma Radiation Survey

In February 1994, RUST Geotech Inc. conducted a surface radiation survey at the site in conjunction with ER Site 21. The survey used a scintillometer containing a sodium-iodide

detector to measure gamma radiation, and no detections were found above the background readings of 10 to 13 microroentgen per hour (RUST Geotech Inc. July 1994).

3.5 Assessment of Gaps in Information

There are no analytical data on soil samples to verify that a release did not occur at ER Site 62. However, recent ER Project interviews and SNL/NM technical documents indicate that only very small quantities of HE were used in the tests, and it is highly unlikely that hazardous waste or constituents were released into the environment.

3.6 Rationale for Pursuing An Administrative NFA Decision

SNL/NM is proposing an administrative NFA decision for ER Site 62 because the SWMU was operated to prevent the release of hazardous waste or constituents into the environment (Criterion B). The Greystone Manor homestead was used by SNL/NM from 1952 to 1957 to study terrain blast effects (62-13, 62-24, 62-25, 62-26, 62-32). All tests were conducted with very small quantities of HE (less than one ounce), and all HE was consumed in the tests. In addition, indoor tests were operated to contain all materials inside the building, and outdoor tests (if any) would have utilized such small quantities of HE that no residual hazardous waste or constituents would remain at the site. Aerial photographs show the building and associated structures were removed from the site between 1957 and 1959 (USGS 1959).

Twenty-five to thirty years later, an inspection conducted under the CEARP reported that explosives work was conducted near this SWMU in the 1950s, and residual HE (including barium) were thought to be present in the area (DOE September 1987). It was also reported that a MAPP gas explosion was used to blow up a building at this site. However, the location and history of ER Site 62 have been better defined through ER Project interviews (62-15, 62-48). It has been established that the MAPP gas test was conducted at the former Ranch House (ER Site 88A) and not at Greystone Manor (62-47).

In November 1993, a UXO/HE survey conducted by KAFB in conjunction with ER Site 21 found no live UXO/HE or significant UXO/HE debris at the site (21-34). In February 1994, a surface radiation survey of the site was done in conjunction with ER Site 21. No detections were found above the background levels (RUST Geotech Inc. July 1994). Therefore, based on recent surveys and newly obtained historical information, ER Site 21 is recommended for an administrative NFA decision because the SWMU was operated to effectively prevent the release of hazardous waste or constituents to the environment (Criterion B).

4.0 CONCLUSION

Based upon the evidence cited above, no potential remains for a release of hazardous waste (including hazardous constituents) that may pose a threat to human health or the environment.

5.0 REFERENCES

5.1 ER Site References

Section 5.1 contains a comprehensive bibliographical list of the documents relating to ER Site 62. This list is arranged numerically by the numbers assigned to each document.

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62-5.	ER Program Site Tour Notes, Sandia National Laboratories, Albuquerque, New Mexico. July 1992.
62-6.	Sandia National Laboratories, [n.d.]. Sites 62 and 88 Map, Albuquerque, New Mexico.
62-7.	Sandia National Laboratories, [n.d.]. Figure 2-3 ER Sites in Coyote Test Field and Coyote Canyon (Site 62 Map), Albuquerque, New Mexico.
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